

## A new subspecies of *Gandaca harina* (Horsfield, [1829]) (Lepidoptera, Pieridae) from Simuk, Indonesia<sup>1</sup>

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**Abstract** A new prominent subspecies of *Gandaca harina* (Horsfield) is described from Simuk of Batu Islands, Mentawai Archipelago, Indonesia. This subspecies is distinguished from the known subspecies by the even and very narrow forewing black border in the female.

**Key words** Pieridae, Coliadinae, *Gandaca*, *Gandaca harina*, new subspecies, Simuk, Batu Islands, Mentawai Archipelago, Indonesia, tropical rainforest.

### Introduction

The genus *Gandaca* Moore, 1906 consists of two species, the type species *G. harina* (Horsfield, [1829]) occurring from Assam, Sundaland to the Lesser Sundas, and *G. butyroasa* (Butler, 1875) replacing it from Sulawesi to New Guinea (Yata, 1981). In the course of our revisional research on the genus *Gandaca*, we found a new subspecies of *G. harina* occurring in Simuk in the Batu Islands located between Nias and Siberut, Mentawai Archipelago, Indonesia. Hitherto *G. harina* has been classified into four subspecies within Mentawai Archipelago: *distanti* Fruhstorfer, 1910 from Engano and ?Nias, *beruta* Corbet, 1941 from Siberut, *porana* Corbet, 1941 from N. Pagi, and *babiensis* Hanafusa, 1994 from Babi. Therefore, we have at least 5 subspecies from the Archipelago. This butterfly mainly inhabits lowland forest or around forest edges probably because its food-plant is *Ventilago oblongifolia* which grows in the forest. It seems that forest species occurring in Mentawai Archipelago, along with their remarkable geographic variation such as *G. harina*, can provide valuable information for biogeographic evaluation and discussion of this region. In addition, this fascinating chain of islands is also very important from the viewpoint of diversity conservation in South-East Asia, because of the peculiar fauna and flora with each island having endemic taxa. A wave of lumbering or deforestation is rapidly spreading to it, however, and World Wildlife Fund (WWF) has started activities to protect the wildlife and culture of these islands which it considers a matter of urgency (WWF, 1980).

Abbreviations used for the type depositories in the text are as follows.

BLKU—Biosystematics Laboratory, Graduate School of Social and Cultural Studies, Kyushu University, Fukuoka.

NHM—Natural History Museum, London.

KMNH—Kitakyushu Museum of Natural History, Kitakyushu.

BOGM—Bogor Museum, Jakarta.

<sup>1</sup> Contribution from the Biosystematics Laboratory, Graduate School of Social and Cultural Studies, Kyushu University (No. 38).

## Description

### *Gandaca harina simukensis* Yamauchi et Yata, **ssp. nov.** (Figs 1-4)

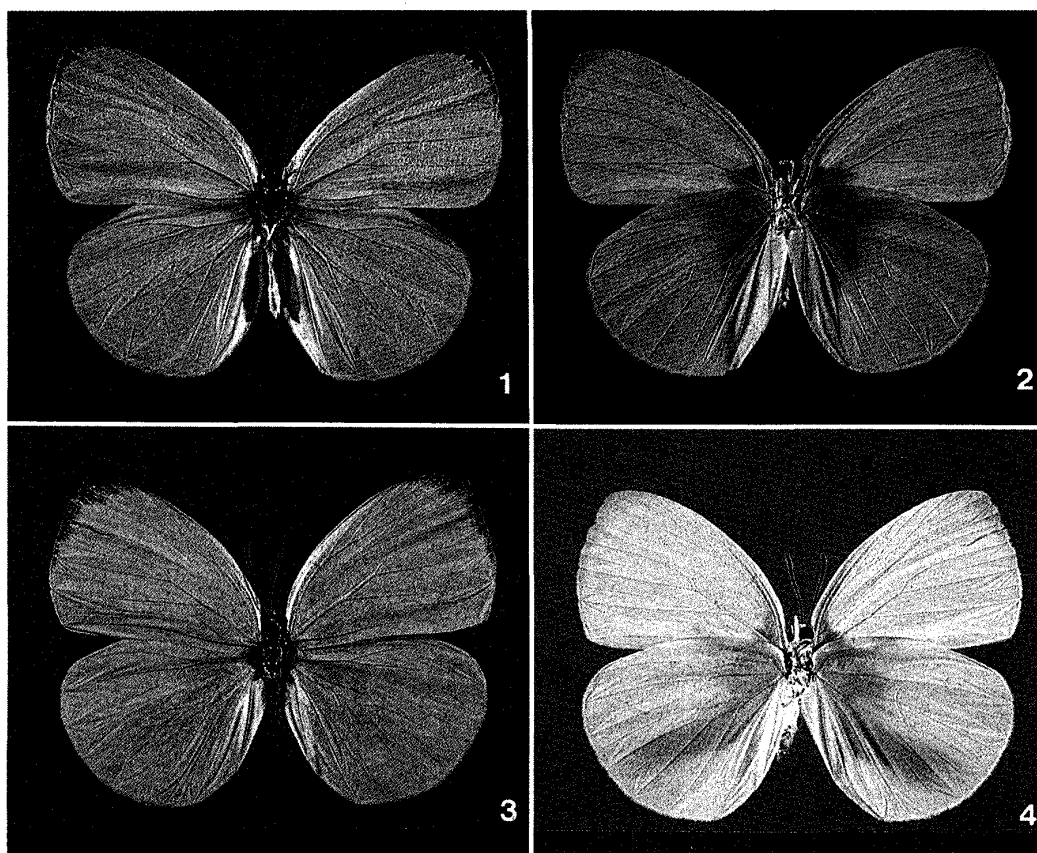
Male (Figs 1-2). Upperside: Ground colour pale lemon-yellow; forewing black border very narrow, continued from middle of space 9 to near vein 3, with its inner edge evenly rounded, width of black border 1.3-2.3 mm at vein 7+8 (av=1.6 mm,  $n=6$ , st=0.4), 0.2-0.5 mm at vein 4 (av=0.4 mm,  $n=6$ , st=0.1). Underside: Ground colour pale lemon-yellow. Forewing somewhat rounded at apex and distal margin slightly convex.

Female (Figs 3-4). Upperside: Ground colour pale cream, slightly darkened along wing margin; forewing black border evenly very narrow, continued from vein 10 to near vein 2, with its inner edge somewhat diffused, weakly projected along veins 4 and 6, width of black border 0.6-1.7 mm at vein 7+8 (av=1.2 mm,  $n=2$ , st=0.7), 0.4-0.7 mm at vein 4 (av=0.6 mm,  $n=2$ , st=0.2). Underside: Ground colour yellowish-pale cream. Forewing somewhat rounded at apex and distal margin slightly convex.

Forewing length. Male, 20.0-23.5 mm (av=22.0 mm,  $n=7$ , st=1.0); female, 20.5-22.0 mm (av=21.3 mm,  $n=2$ , st=1.3).

Male genitalia (Fig. 5). Although the material shows slight individual variations ( $n=3$ ), they are within the range of variation observed for *G. harina*.

Female genitalia. There are no distinctive differences between *G. h. simukensis* ssp. nov. and



Figs 1-4. *Gandaca harina simukensis* Yamauchi et Yata, **ssp. nov.**, Simuk [BLKU]. 1. ♂, holotype. 2. *Ditto*, underside. 3. ♀, paratype. 4. *Ditto*, underside.

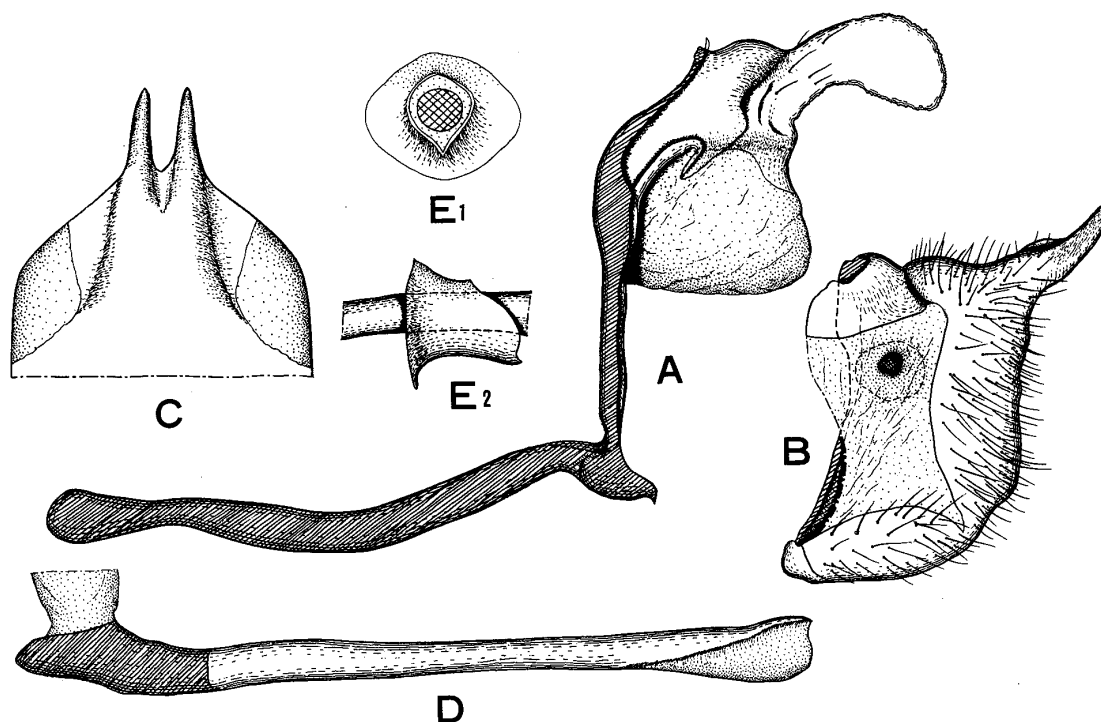


Fig. 5. Male genitalia of *Gandaca harina simukensis* Yamauchi et Yata, ssp. nov. from Simuk. A: ring (lateral), B: valva (inner aspect of right-hand), C: superuncus (dorsal), D: phallus (lateral), E1: juxta (posterior), E2: juxta (lateral).

*G. h. harina*, based on a dissected specimen.

Type locality. Simuk, Batu Islands, Mentawai Archipelago, Indonesia.

Distribution. This subspecies is restricted to Simuk in its distributional range.

Holotype. Simuk, 1 ♂, IX. 1988, Y. Nishiyama leg. [BLKU]. Paratypes. Same data as holotype, 6 ♂ 2 ♀ [BLKU, NHM, KMNH, BOGM].

Remarks. This new subspecies is similar to subsp. *aora* Moulton, 1923 from Tioman and Aur, subsp. *austrosundana* Fruhstorfer, 1910 from Lombok and Sumba, and subsp. *beruta* from Siberut, but can be distinguishable from them by the even and very narrow forewing black border especially in the female. In other subspecies, there is no very narrow forewing black border in females as occurs in *G. h. simukensis* ssp. nov.

### Acknowledgements

The first author expresses his sincere gratitude to Profs T. Saigusa and H. Shima (BLKU) for their constant guidance and encouragement. The authors thank Dr B. J. Sinclair (BLKU) who critically reviewed an earlier draft of this paper.

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## 摘 要

インドネシア, シムク島産 *Gandaca harina* (Horsfield, [1829]) の 1 新亜種 (山内健生・矢田脩)

*Gandaca harina simukensis* Yamauchi et Yata, ssp. nov.

インドネシアのメンタワイ諸島バツ群島のシムク島から *Gandaca harina* の一新亜種, *simukensis* ssp. nov. を記載した. 本亜種は, 雄の翅が淡いレモン色であること, 雌の翅表が淡いクリーム色, 裏が黄色みを帯びた淡いクリーム色であること, 雌雄前翅表面の黒帯の巾が極めて狭く一樣であることなどから, 原名亜種と容易に区別できる. 特に, 本亜種の雌に見られる前翅表面の非常に狭い黒帯は他のいずれの亜種にも見られない. 本亜種の雌雄交尾器の形態は, *Gandaca harina* の種内変異の幅に含まれた.

(Accepted April 8, 1999)